

Reply To Examiner's Remarks

Claims 1-22, as amended, are presented for consideration.

The Examiner rejects claims 1 and 12, 3 and 14, 5 and 16, 6-8, 17-19, and 11 and 22 under 35 U.S.C. 103(a) as obvious in view of the combined disclosures in U.S. Patent No. 5,884,156, issued to Gordon, and U.S. Patent No. 6,154,538, issued to Nakano. The Examiner rejects claims 2 and 13, 4 and 15, 9 and 20, and 10 and 21 under 35 U.S.C. 103(a) as obvious in view of the disclosures in the Gordon patent.

The Gordon patent discloses a radiotelephone system with two speakers and two modes of operation; a conventional telephony mode and a dispatch mode. The telephony mode provides a conventional, low volume audio signal to a front speaker in the radiotelephone (column 2, lines 7-9 and column 4, lines 62-65). The dispatch mode uses either or both the front and a back speakers and provides two discrete levels of a speaker volume control, namely, lower and higher, as described at column 4, lines 47-50, where the level of loudness of such lower and higher speaker volume must be manually preset by a user using a keypad, as described at column 3, lines 43-45. Activating the lower and higher speaker volumes, and which speakers to be selected, in the dispatch mode is controlled according to a proximity sensor (column 4, 66-67 to column 5, lines 1-2) that detects whether the user is near the front panel of the radiotelephone or not.

The Nakano patent discloses a radiotelephone system where, when a telephone call is received or on hold and when a user subsequently holds the radiotelephone to his ear, a speaker in the radiotelephone is automatically enabled without pressing a button such as "start" or other designated button with such function, as described at column 1, lines 55-60 and column 2, lines 51-55. Such automatic enabling means for the speaker is by detecting the variation of impedance due to the variation of the space volume between a earpiece (i.e. a hole on the housing. See Figure 2) and the speaker, where the variation is caused by the user holding the radiotelephone to his ear, as described at column 2, lines 7-11, column 3, lines 41-44 and Figures 2 and 3.

Method claim 1 of the subject patent application recites a method for controlling operation of a radiotelephone. The method comprises the processes of:

determining if a radiotelephone is activated for use;

when the radiotelephone is activated, determining when the radiotelephone is within a selected proximity zone of a radiotelephone user;

when the radiotelephone is activated and is within the proximity zone, estimating a distance d between the radiotelephone and the user and adjusting a volume control for a radiotelephone speaker according to the estimated distance.

The Gordon patent describes a speaker volume control with two discrete levels, low or high, preset by the user, based on sensing proximity of the user position to the front panel of a radiotelephone. When the sensor determines that the device is positioned within a selected proximity zone, the high volume is enabled to a back speaker, and the low volume to a front speaker is either enabled or disabled, depending on the configurations. However, when the user is located within the selected proximity zone, Gordon does not teach or suggest provision of adjusting a volume control for a single speaker according to the measurement of estimating a distance between the radiotelephone and the user.

The Nakano patent is concerned with as to how to automatically turn on a speaker in a radiotelephone when a user's ear is near, or at, a earpiece of the radiotelephone, but not concerned with estimating a distance between the radiotelephone and the user or user's ear and adjusting a volume for the speaker according to the estimated distance. As a matter of fact, column 1, lines 16-25 in the Nakano patent, which is being recited herein as the reason for such rejections, is merely a reference quoted from Japanese Patent No. 5-183621, issued to Hiraiwa, and there are no disclosures in the Nakano patent regarding the speaker volume control with using one or more proximity sensors to estimate a distance between the sensor and the user or user's head and adjusting the volume accordingly. As to the Hiraiwa patent, unless there are detail descriptions and supporting drawings relevant to the subject patent application, the text quoted in column 1, lines 16-25 could not be interpreted as to how and what they mean.

The Gordon patent and the Nakano patent, combined together, do not teach or suggest provision of estimating a distance between the radiotelephone and the user and adjusting a volume control for a speaker according to the estimated distance, when the radiotelephone is activated and within the proximity zone. Thus, claim 1 of the subject patent application, amended herein to more clearly recite embodiment of the invention, is not obvious in view of the combined disclosures in the Gordon and Nakano patents.

Amended claim 2 of the application, dependent upon claim 1, recites that the method further comprises the following process: when the radiotelephone is not within the proximity

zone, taking at least one of the following actions; (1) refraining from adjusting the speaker volume control; (2) automatically adjusting the speaker volume control to a maximum audio level; (3) providing a notification that the radiotelephone is not within the proximity zone; and (4) automatically disabling the speaker until the radiotelephone is within the proximity zone.

When a user is not within the proximity zone, the combined Gordon and Nakano patents teach provision of simply swapping the speaker volumes, the high and the low, with respect to the front and the back speakers from when the user is within the proximity zone. However, the combined disclosures do not teach or suggest taking other actions such as refraining from adjusting a speaker volume control on a single speaker and not swapping with two speakers; providing a notification that the radiotelephone is not within the proximity zone; or automatically disabling the speaker until the radiotelephone is within the proximity zone. Such actions are important in the sense that when the radiotelephone is out of the proximity zone, with the way the present invention defines, the radiotelephone is not likely be in a ear-mouth, hand-held, or hands-free position, within adequate distance between the user and the device, and/or in too high ambient noise environment. Therefore, simply changing the high volume from the back speaker to the front, regardless of whether or not the user is able to hear, would not be a sufficiently adequate solution. Thus, claim 2 of the subject patent application is not obvious in view of the combined disclosures in the Gordon and Nakano patents.

Amended claim 3, dependent upon method claim 1, recites that when the radiotelephone is within the proximity zone, the combined Gordon and Nakano patents provide a maximum speaker volume to the back speaker and optionally a minimum, to the front speaker. This is quite different from providing both the minimum and maximum values of the speaker volume to a single speaker while varying the speaker volume monotonically with the distance between the min and max, as claim 3 recites. The combined Gordon and Nakano patents provide provision of changing the speaker volumes discretely such as the high and the low between the front and back speakers, depending whether the radiotelephone is within the proximity zone or not, and therefore provide no motivation for varying the speaker volume of a single speaker according to the estimated distance. Thus, claim 3 of the subject patent application is not obvious in view of the combined disclosures in the Gordon and Nakano patents.

Claim 5, dependent upon method claim 1, provides adjusting a microphone gain control

the same way the speaker volume control is controlled when the radiotelephone is within the proximity zone. The combined Gordon and Nakano patents provide no such microphone gain control. Thus, claim 5 of the subject patent application is not obvious in view of the combined disclosures in the Gordon and Nakano patents.

Claim 9, dependent upon method claim 1, recites provision of determining whether the radiotelephone is within a selected proximity zone of a radiotelephone user when the radiotelephone is activated for use; when the radiotelephone is activated and within the proximity zone, estimating a distance between the radiotelephone and the user and adjusting a volume control for a radiotelephone speaker according to the estimated distance measured by one or more distance sensors, including infrared, photoelectric, sound, capacitive and temperature sensors, etc.

The Gordon patent teaches provision of using a distance sensor to determine whether or not a user is located within a predetermined range of a radiotelephone, so that a speaker volume can be set either discretely high or low. However, the Gordon patent does not teach or suggest provision of using one or more distance sensors to estimate a distance between the user and the radiotelephone and compare the distance with a reference distance that predefines the proximity zone, so that the speaker volume can be variably adjusted according to the estimated distance.

For the foregoing reasons, the Applicants believe that claims 1-3, 5 and 9, as amended, are not obvious in view of, and are allowable over, the combined disclosures of the Gordon patent and the Nakano patent. Claims 4, 6-8, 10 and 11 depend upon claims 1-3, 5 and 9, and are believed to be allowable if claims 1-3, 5 and 9 are allowable. Claims 12-22 are systems claims corresponding to the method claims 1-11, respectively, and are believed to be allowable if the corresponding method claims are allowable.

The Applicants request that the Examiner pass the application, including claims 1-22, as amended, to issue as a US patent.

Respectfully Submitted,


Jae H. Shim

Date: 7 January 2004

Inventor